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BOOK REVIEWS

Sensory Discrimination in Normal and Feeble-minded Children. By ANNA M. PETERSEN and E. A. DOLL. *The Training School Bulletin.* November and December, 1914.

This study is an attempt to discover if there are any significant differences between normal and feeble-minded individuals in the matter of pure sense discrimination. The field of lifted weights was chosen. The method of right and wrong cases was employed, with a standard stimulus of 80 grams and a graded comparison series from 82 to 100 grams. The upper threshold alone was determined; and this was defined as that intensity of comparison stimulus where a "right" judgment was obtained eight times out of ten. Equality judgments were eliminated by the instructions, or, if insisted upon, were considered as wrong judgments. Both time orders were employed. The results include liftings from 203 feeble-minded subjects, and as a control group 262 normal children were examined.

While working with the feeble-minded group, the authors discovered three types:—1. Those who absolutely failed to follow the instructions; these were almost entirely under six years mental age as measured by the Binet Scale. 2. Those who failed to make judgments in accordance with the instructions, *i. e.*, successive liftings with the same hand, but who could make judgments by means of liftings with both hands simultaneously; these were largely between 6 and 8 years Binet. 3. Those who were able to conform to the instructions; this group fell very largely over 8 years Binet.

For the feeble-minded group, the authors found a positive but low correlation between what they consider "discriminative capacity" and mental age, the $r = +0.36$. The average D. L. for this group was 12.6 grams for the second type, 7.8 grams for the third type. No correlation was found in this group between "discriminative capacity" and chronological age, the coefficients for the ages of 8, 9 and 10 years giving values of $+0.17$, $+0.19$ and -0.24 respectively. No significant sex differences were noted for either the feeble-minded or normal groups.

For the normal group, the authors find a steady increase in average "discriminative capacity" with increase of age, the coefficient being $+0.63$. For this group they assume that the chronological age is the mental age as well. When we compare the curves of the "discriminative capacity" for each age for the two groups, we find that the curve for the normal group is lower except at one point (8 years). These differences are not great however, amounting to only one gram on the average.

From these results the authors conclude that:—1. "Increase in discriminative capacity is a function of intellectual rather than physical maturation." 2. Inasmuch as the differences between normals and feeble-minded (when we consider mental age) are so very small, and furthermore, since these slight differences may be accounted for in terms of attention and the like, this experiment does not have any

diagnostic value, except to ascertain whether the subject has the ability to conform to the instructions of experimentation. This latter is a diagnostic sign of 8 years Binet.

The problem attacked by Petersen and Doll is certainly an interesting one and is also one which might be of extreme practical value. Unfortunately, however, the authors have made certain errors of a technical methodological nature which, we believe, entirely invalidate their results. In the first place, their choice of a threshold value which gives 8 out of 10 correct judgments was most unfortunate. The recognized limen value is one upon which a greater or less judgment will occur with a probability of 0.5. The exclusion of the equality judgments by these experimenters, we believe to be absolutely unwarranted.

The authors, furthermore, speak throughout of "discriminative capacity," and this we believe they are unable to do on the basis of the results obtained. It will be remembered that they determined only the upper threshold and their "discriminative capacity" was the difference between this and their standard stimulus. Hence they assume that the point of subjective equality is the same as objective equality. Only on the basis of such an assumption could they obtain a measure of sensitivity of their subjects. It would be very curious indeed if the points of objective and subjective equality came out exactly equal or even approximately so—even though both time orders were employed. The authors fail to mention whether the rate of lifting and the time between liftings was controlled and kept constant, and this alone would change the point of subjective equality to a considerable extent. Furthermore, the authors admit that the instructions varied for different subjects to a considerable extent, and this again would have an effect. We must also disagree most strongly with Petersen and Doll's statement that there is no effect of practice in a lifted weight series. Such an effect is to be found and it again shifts the point of subjective equality. Hence, unless the authors know the position of this point,—and this they have no means of knowing from their present data—their determination of a measure of sensitivity is entirely invalidated.

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- I. *Suggestions for Revising, Extending and Supplementing the Binet Intelligence Tests.* II. *Psychological Principles Underlying the Binet-Simon Scale and Some Practical Considerations for Its Correct Use.* III. *The Significance of Intelligence Tests for Mental Hygiene.* By LEWIS M. TERMAN. Reprinted from the *Journal of Psycho-Asthenics*, Vol. XVIII, Nos. 1, 2, 3, 1913-1914. Pp. 20-33, 93-104, 119-127.

In this group of papers Terman presents a survey of the situation regarding many of the much-mooted questions concerning the Binet-Simon scale and allied attempts to measure intelligence. In I. he advocates the use of an entirely unselected group of children for standardizing any test, also the use of the round year number as the chronological age indicant, the adoption of the median accomplishment of a group as the norm for that age, and the shifting of certain questions in the present scale. He suggests that tests be developed which will arouse nearly the same factors in all subjects, which will be as free as possible from the personal equation of the examiner in their evaluation, and which will be real tests of intelligence and not of training. He suggests, also, the need of a standard pedagogi-